Claims:

1. A method for controlling a blood pump connected to a patient, comprising the following steps:

determining a value for the heart rate of the patient;

determining a value for the speed of the pump;

calculating the ratio of said heart rate value and said speed value; and

regulating the speed of the pump in accordance with said ratio.

2. The method of Claim 1, wherein the speed of the pump is regulated to achieve a target flow rate that is a monotonic function of said ratio within a defined range of flow rates.

3. The method of Claim 2, wherein said monotonic function is linear, and

said target flow rate $Qtarget = K_1*M + K_2$

where $M = HR/f(N)$, HR is the patient's heart rate, N is the speed of the pump, and K_1, K_2 are constants.

4. The method of claim 3 wherein $f(N) = N^n$, where n is related to at least one of a type and size of the pump.

5. The method of Claim 3, wherein:

$K_1 = (Qmax - Qmin)/(Mmax - Mmin)$; and

$K_2 = Qmin - (Qmax - Qmin)*Mmin/(Mmax - Mmin)$;

where Qmax is a maximum allowable flow rate of the pump, Qmin is a minimum allowable flow rate of the pump, Mmax is a maximum threshold value of the ratio M, and Mmin is a minimum threshold value of the ratio M.

6. The method of Claim 5, wherein:

$Mmax = HRmax/(Nmin)^n$; and

$Mmin = HRmin/(Nmax)^n$.

7. The method of Claim 1, further comprising the step of:

changing the pump speed when flow pulsatility falls below a defined threshold.

8. The method of Claim 7, wherein said threshold is a predefined monotonic function based on hydraulic performance of the pump.

9. The method of Claim 7, wherein the step of changing the pump speed is carried out prior to the step of regulating the speed of the pump in accordance with said ratio.

10. A blood pump system for assisting a patient's heart, the system comprising:

a blood pump connected to the patient; and

a controller for regulating the speed of the pump based on a ratio of the patient's heart rate and the speed of the pump.

11. The system of Claim 10, wherein the controller regulates the speed of the pump to achieve a target flow rate that is a monotonic function of said ratio within a defined range of flow rates.

12. The system of Claim 11, wherein said monotonic function is linear, and

said target flow rate $Qtarget = K_1*M + K_2$

where $M = HR/f(N)$, HR is the patient's heart rate, N is the speed of the pump, and K_1, K_2 are constants.

13. The system of claim 12, wherein $f(N) = N^n$, where n is related to at least one of a type and size of the pump.

14. The system of Claim 12, wherein:

$K_1 = (Qmax - Qmin)/(Mmax - Mmin)$; and

$K_2 = Qmin - (Qmax - Qmin)*Mmin/(Mmax - Mmin)$;

where Qmax is a maximum allowable flow rate of the pump, Qmin is a minimum allowable flow rate of the pump, Mmax is a maximum threshold value of the ratio M, and Mmin is a minimum threshold value of the ratio M.

15. The system of Claim 14, wherein:

$Mmax = HRmax/(Nmin)^n$; and

$Mmin = HRmin/(Nmax)^n$.

16. The system of Claim 10, wherein the controller changes the pump speed when flow pulsatility falls below a first threshold.

17. The system of Claim 16, wherein said threshold is a predefined monotonic function based on hydraulic performance of the pump.

18. The system of Claim 16, wherein the controller performs said changing of pump speed prior to regulating the speed of the pump based on said ratio.

19. A machine readable medium comprising a computer program that executes the process of regulating the speed of a blood pump connected to a patient, based on a ratio of the patient's heart rate and the speed of the pump.

20. The machine-readable medium of Claim 19, wherein the speed of the pump is regulated to achieve a target flow rate that is a monotonic function of said ratio within a defined range of flow rates.

21. The medium of Claim 19, wherein:

said target flow rate $Qtarget = K_1*M + K_2$,

where $M = HR/N^n$, HR is the patient's heart rate, N is the speed of the pump, n is related to at least one of a type and size of the pump, and K_1, K_2 are constants.

22. The medium of Claim 21, wherein:

$K_1 = (Qmax - Qmin)/(Mmax - Mmin)$; and

$K_2 = Qmin - (Qmax - Qmin)*Mmin/(Mmax - Mmin)$;

where Qmax is a maximum allowable flow rate of the pump, Qmin is a minimum allowable flow rate of the pump, Mmax is a maximum threshold value of the ratio M, and Mmin is a minimum threshold value of the ratio M.

23. The medium of Claim 22, wherein:

$Mmax = HRmax/(Nmin)^n$; and

$Mmin = HRmin/(Nmax)^n$.